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# Measuring Well-Being for Public Policy: Preferences or Experiences?

Paul Dolan and Tessa Peasgood

## ABSTRACT

Policy makers seeking to enhance well-being are faced with a choice of possible measures that may offer contrasting views about how well an individual's life is going. We suggest that choice of well-being measure should be based on three general criteria: (1) the measure must be conceptually appropriate (that is, are we measuring the right sort of concept for public policy?), (2) it must be valid (that is, is it a good measure of that concept?), and (3) it must be empirically useful (that is, does it provide information in a format that can be readily used by policy makers?). Preference-based measures (as represented by income) are compared to experience-based measures (as represented by subjective evaluations of life) according to these criteria. Neither set of measures meets ideal standards, but experiences do fare at least as well as preferences, and subjective evaluations perform much better than income alone as a measure of well-being.

## 1. INTRODUCTION

In various ways, policy makers seek to improve of the well-being of the populations they serve. The question is, do they have a clear idea about what constitutes well-being? Economists have for some time framed this in terms of utility, as represented by preferences (Fisher 1918). The degree to which preferences are fulfilled is determined primarily by an

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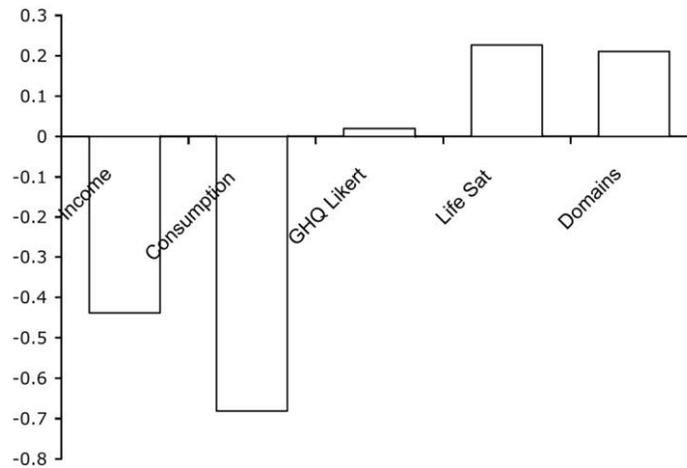
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individual's budget constraint, which is determined by her income and prevailing prices. It is not surprising, then, that economists have paid so much attention to national income as a proxy for well-being. More recently, some economists have sought to improve the use of income as a proxy for well-being by focusing only on those aspects of income that are deemed to bring genuine improvements in well-being. Examples of this approach include adjusted income accounts, such as the Index of Economic Well-Being (Osberg 1985). A preference satisfaction (or desire fulfillment) account of well-being has also been at the heart of philosophical discourse.

Many alternative approaches in philosophy adopt mental-state accounts of well-being. These accounts view well-being as a psychological phenomenon characterized by feelings of pleasure and displeasure, happiness and sadness, and satisfaction and dissatisfaction. Such accounts of well-being are generally grounded in hedonistic philosophies (Kahneman 2000), but we use the term "subjective evaluation" to refer to a more general account that considers how people evaluate their lives, as well as how they feel in a strict hedonic sense. Direct measures of subjective evaluation—usually asking people how satisfied they are with their lives overall—have been used by psychologists for 50 years, and they are now becoming popular among economists (Dolan, Peasgood, and White 2006). Subjective evaluation is also making its way up the policy agenda, particularly in the United Kingdom (see, for example, Defra 2005).

Of course, the debate about what constitutes well-being is longstanding.<sup>1</sup> Despite a lack of theoretical agreement, policy decisions reflect judgments, at some level, about the well-being of those who may be affected by the decisions. Moreover, the choice of well-being measure may have very different implications for which people we judge to have high and low levels of well-being. Consider the following data from the British Household Panel Survey (BHPS) in the United Kingdom. The BHPS is an annual survey of about 5,000 households (about 10,000

1. Another prominent account is one that takes the view that well-being can be represented as an objective list of social and economic attainments or that well-being is usefully correlated to such attainments as measured by, for example, the Human Development Index, which is a weighted average of longevity, educational attainment, and real gross domestic product per capita (United Nations Development Programme 2006). We do not consider this approach further in this paper and concentrate instead on the preference satisfaction and subjective-evaluation accounts of well-being.



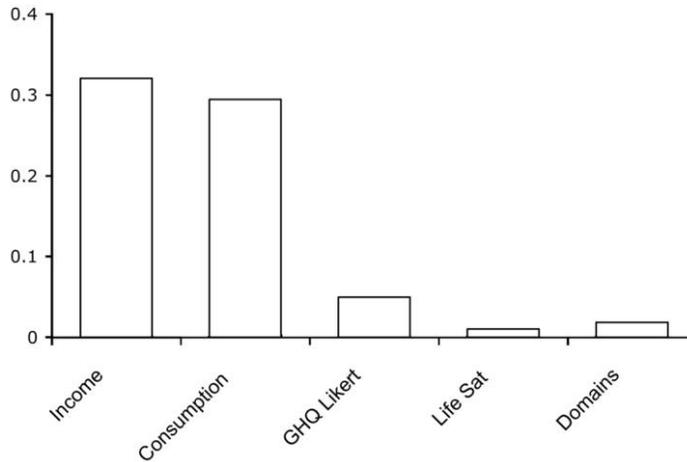
**Figure 1.** Average standardized scores of well-being for those over age 70

individuals), has been running since 1991, and is broadly representative of the British population (Nathan 1999).

For subgroups of respondents in 2004/2005 (wave 14), Figures 1–4 show average standardized scores of income (net current household income controlling for household size), consumption (for a limited range of consumption items and controlling for household size), a General Health Questionnaire (GHQ) measure of anxiety and depression (12 questions with four possible responses, giving a score out of 36), life satisfaction (scored from 1 to 7), and weighted responses to satisfaction in eight domains. The domains are health, household income, house or flat, spouse or partner, job, social life, amount of leisure time, and use of leisure time. Weights are derived from a regression model predicting overall life satisfaction.

It is clear that different groups have different levels of well-being based whether preference satisfaction (income or consumption) or subjective evaluation (GHQ, life satisfaction, or domain satisfaction scores) is used. In the case of people over age 70, the difference between consumption and life satisfaction is close to 1 standard deviation. Given that the choice of well-being measure is important, it is necessary to decide which measure is most appropriate to use in resource allocation decisions.

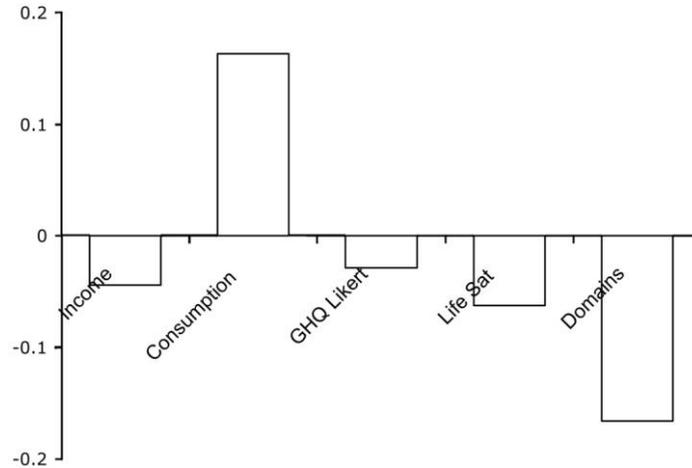
It is important that the choice of well-being measure be based on



**Figure 2.** Average standardized scores of well-being for those with a degree or equivalent

clear criteria that are relevant to the policy context. It is surprising that there has been very little consideration given to precisely what conditions a well-being measure for policy purposes should satisfy. Sumner (1996) does set out criteria for a theory of welfare of “descriptive adequacy,” which, among other things, requires compatibility with widely held intuitions about well-being and shares many of the features we consider here. However, our emphasis is on the need for a measure of well-being that can actively be used for policy rather than to establish criteria for an account of well-being for philosophical dialogue.

In this paper, we consider three general criteria that any measure for policy should be evaluated against: (1) the measure must be conceptually appropriate, (2) it must be valid, and (3) it must be empirically useful. We suggest that a conceptually appropriate measure is one that is a complete measure of prudential value (that is, what is good for the individual rather than what might be considered to be the good life). An appropriate measure will measure what it purports to, but validity is problematic in the absence of a gold standard for well-being. Nonetheless, the measure should allow for comparisons across time and people and should converge with and predict things (such as health) commonly thought to be associated with well-being. A measure of well-being will be empirically useful if it is cardinal, unbiased, sensitive to changes in well-being, and practical to collect.

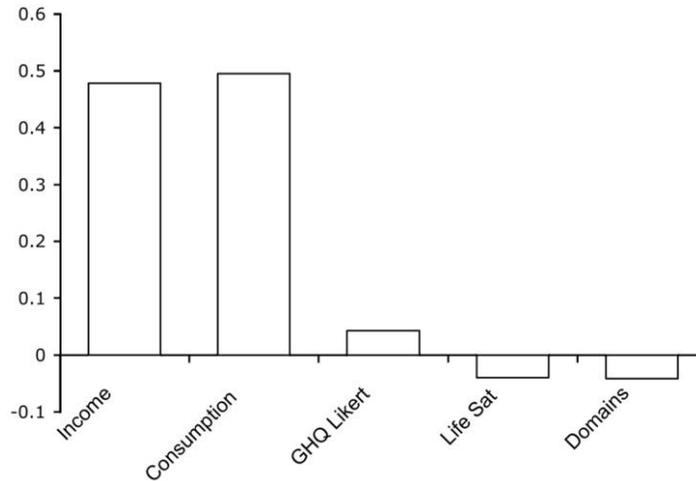


**Figure 3.** Average standardized scores of well-being for those ages 25–50 with children

We evaluate the preference satisfaction account (as largely proxied by income) and the subjective-evaluation account against these criteria as measures of individual (rather than social) well-being.

Subjective evaluation is usually identified through survey questions, which vary from single questions (for example, “All things considered, how satisfied are you with your life as a whole these days?” [World Values Survey 2000]) to multiple questions (for example, Satisfaction with Life Scale [Diener et al. 1985]). Questions may also use the terminology of “happiness” (for example, “Taking all things together, would you say you are . . . Very happy, Quite happy, Not very happy, Not at all happy” [World Values Survey 2000]). Responses to questions using the language of satisfaction generally correlate highly with those asking about happiness (van den Berg and Ferrer-i-Carbonell 2007; Di Tella et al. 2003; Helliwell and Putnam 2004). Therefore, we use the term “subjective evaluation” to refer all of these general measures. We do not, however, explore the advantages and disadvantages of more hedonistic measures of well-being, such as measures of affect balance or measures that aggregate daily affect (for example, Daily Reconstruction Method [Kahneman et al. 2004]).

We recognize that governments do not rely on income alone as a measure of well-being, and many social indicators are used to judge the effectiveness and the distributional consequences of government policy.



**Figure 4.** Average standardized scores of well-being for those who commute more than 1 hour per day.

However, willingness to pay (WTP) is widely used as a measure of benefit in cost-benefit analysis, and income is sometimes treated as a complete measure of value. Therefore, it is useful to compare income with life satisfaction, which is increasingly being advocated as an alternative measure of well-being for policy.

We also recognize that a measure of well-being could be used in many policy contexts: in economic evaluations such as cost-benefit or cost-effectiveness studies in (for example) health care, in research on understanding issues such as the causes of well-being throughout the life course, in measuring individual well-being and aggregate well-being for macro policy design, in monitoring distributional and equity concerns and evaluating policy initiatives aimed at distributional issues, and in international comparisons aimed at judging relative country performance and contributing to national-level policy agendas. Precisely what is required of the measure may vary according to context, but the criteria should apply in all circumstances, even if the relative importance of the criteria may vary depending upon the application of the measure.

Notwithstanding some variation according to specific contexts, our general conclusion is that income as a proxy for preference satisfaction performs no better, and sometimes worse, than life satisfaction ratings as a measure of individual well-being for public policy. In Sections 2

and 3, we set out the criteria and assess the accounts according to them before considering some of the implications of our conclusion for research and policy in Section 4.

## 2. THE CRITERIA

### 2.1. The Measure Is Conceptually Appropriate

While it may be philosophically interesting to consider the best and most complete account of well-being, policy makers require knowledge only about that part of well-being that is relevant for public policy. This means the account and the measure must include only those things that are relevant to policy—and it must exclude those things that are not relevant. In relation to the former consideration, a distinction can be made between the good life and a life that is good for the individual concerned. The concept of a good life includes values beyond what is good for the individual, such as moral, spiritual, and aesthetic concerns. The concept of well-being most suitable for public policy is that which is good for the individual, that is, prudential value. This is not to say that nonprudential values should not be of concern for government. However, for transparency and clarity, this can be in addition to well-being rather than combined in one well-being measure.

The measure should incorporate all those attributes that are seen to make someone's life better for her; hence, it is an exhaustive measure of prudential value. For example, if the measure excludes something that the individual could have, and society cares about whether she has it for her sake, then the measure may not be sufficiently complete. If an attribute that we care about people having is not picked up by the measure, and this attribute differs between members of the society, then we need to cast doubt either on our intuitions that the attribute is something we should care about or on the measure of well-being.

In relation to what might be excluded from prudential value, some sources of well-being may be illegal or socially illegitimate (Feldman 2002). A contentious issue is whether one individual's well-being is allowed (for policy purposes) to decline when another person's income or consumption rise. Harsanyi (1982, p. 56) proposed that the social welfare function should exclude antisocial preferences, such as "sadism, envy, resentment, and malice." However, one person's consumption may also be viewed as imposing an externality onto other people that they are unable to avoid (Frank 1997; Layard 2006). We may also find in-

appropriate claims on resources arising from the cultivation of expensive tastes (Cohen 1993; Rawls 1982).

Despite these concerns, we suggest that all sources of well-being should be included at the measurement stage. It is impractical to measure the extent to which an individual's well-being has been derived from illegitimate sources, even assuming those sources could be agreed upon and remain stable. Additional information on the sources of well-being or changes in well-being may still be relevant for the formulation of policy, and methods might be developed to determine these where they are considered particularly important.

Well-being may also arise from areas that society does not perceive to be appropriate areas of concern for government intervention, for example, those relating to religious beliefs. However, attributes of well-being should be excluded from a public policy measure only if they cannot be affected by any government policies (and this is unlikely to be known in advance). While it may be appropriate to exclude some attributes of well-being from being targets of government policy, the consequences of any action designed to improve well-being should be judged by its impact on well-being overall.

Therefore, an ideal measure would include all important consequences to the individual, and whether these should all be considered the remit of policy is then a separate question. Of course, a measure of well-being for public policy needs to be acceptable to policy makers and the public. A measure of prudential value is likely to have more legitimacy when it is placed alongside (and sometimes traded off for) other objectives (for example, truth, justice, freedoms, knowledge, beauty, and so on), and this is preferable to trying to incorporate these other values within the well-being measure.

## **2.2. The Measure Is Valid**

To be useful for policy, a measure should measure what it purports to. However, it is impossible to fully establish validity in the absence of a gold standard for measuring well-being. Nonetheless, the measure should show how an individual's well-being changes over time and how it compares to that of other individuals. Interpersonal comparison requires that measurement scales referring to different people can be meaningfully compared. Economists have been remarkably reluctant to make interpersonal comparisons (as a good example, see Robbins 1932). However, we cannot escape the fact that most policy decisions involve, either

explicitly or implicitly, comparisons of the costs and benefits incurred by different people.

One way of considering whether a measure of well-being is valid is to consider the degree to which the measure is similar to (converges on) other measures to which theoretically it should be similar. If the measure is not correlated with factors that we take to be signs of an individual's well-being—such as health, material resources, facial expressions, her opinions about how her life is going, and opinions of those close to her—then this would be of concern for the measure unless a reasonable explanation could be offered. It should be noted that our intuition on sources of well-being may be incorrect, so correlations of a measure of well-being with an attribute that is commonly thought to be a source of well-being should be treated with caution. A measure has predictive validity if it can correctly predict something that we theoretically think it should be able to predict. For example, low levels of well-being may predict attempts at suicide.

### **2.3. The Measure Is Empirically Useful**

For most policy evaluations, we should like to know something about how much well-being changes as well as whether it goes up or down; that is, the measure should be cardinal. Since Pareto ([1906] 1971), many economists have been reluctant to think in terms of cardinal differences in well-being. However, Ng (1997) argues that people can make statements about how much more or less happy they are in one state over another. Moreover, people do not seem to find it difficult to make decisions between ways of spending their time, money, and energy on things that yield noncomparable benefits: it seems an individual can get by without having a clear idea of exactly how much additional well-being she gets from owning a cat, her relationship with her sister, eating chocolate ice cream, or having a detached garage. Griffin (1986) describes individual judgments of intrinsic reward as “roughly cardinal” and capable of distinguishing big from small differences finely enough to guide individual decisions on what is worth sacrificing or risking now for future gains.

The measure should represent an unbiased assessment of well-being and should not be sensitive to theoretically irrelevant factors. The perfect measure in theory may be unreliable in practice if it is subject to various biases, heuristics, and framing effects. Having said this, policy makers will require a measure that is sensitive to real changes in well-being and is able to distinguish between different levels of well-being. From the

policy maker's perspective, being able to show changes that arise as a result of altered circumstances over which the government may have some degree of control is likely to be essential. However, measures should not be so sensitive that they detect differences that are not relevant to the individual or to public policy. A measure's sensitivity needs to be judged by its ability to detect true changes in well-being rather than its variability and divisibility into a large number of different levels.

Finally, any empirically useful measure of well-being for public policy must be practical, that is, easily and cheaply attainable. In order to measure well-being efficiently, there should not be redundancy within the measurement instrument, and additional items should be included only if they provide additional information.

### 3. DO INCOME AND LIFE SATISFACTION MEET THESE CRITERIA?

This section compares the performance of income as a measure of preference satisfaction and evaluative survey reports against the criteria set out above.

#### 3.1. Is The Measure Conceptually Appropriate?

**3.1.1. Preference Satisfaction.** The appropriate conception in this context is one that includes only prudential value. Preference satisfaction measures of well-being can incorporate both prudential and nonprudential value. To the extent that income contributes to the satisfaction of nonprudential desires, it will overestimate the prudential part of well-being that we have argued to be relevant to public policy. However, expenditure on nonprudential desires is very small. Even if all charitable donations reflected nonprudential concerns (which they do not of course, as they also result in the purchase of moral satisfaction), they would represent about 2 percent of disposable household income in the United States (Giving USA 2006). Although many desires for nonprudential values may not reveal themselves in financial giving, the levels of expenditure on charity donations suggest that expenditure on nonprudential values does not represent a large part of expenditure.

It is an open question the degree to which people actually think that well-being increases when more of our preferences are satisfied. Even if preference satisfaction is an appropriate account of well-being, the main measurement instrument—income—is also required to be appropriate. Many people would agree that more income is not necessarily always a

good thing, but many of us act as if it is. Income certainly does not reflect all that is important to well-being, and, at least in advanced economies, friendship and a good family life are often seen as more important to well-being than is income (Lane 2000). To the extent that the consequences of satisfying our desires show up in our life satisfaction, the effect of income would appear to be small (and sometimes less than the effect of relative income). Many studies have also shown that marriage, health, employment status, and contact with friends and family are robust determinants of happiness (see Dolan, Peasgood, and White [2006] for a review). These factors are independently important to happiness, and desires for them cannot be fully satisfied by increased income.

**3.1.2. Subjective Evaluation.** Life satisfaction ratings may correspond to an individual's assessment of her own life or the lives of her family group, those close to her, animal species, or the world more generally, and life satisfaction may arise from sacrifices to her own interests, such as sacrifices for her children. Ng and Ho (2006) argue that life satisfaction has the potential to incorporate beliefs of doing things to benefit others, regardless of whether that benefit has even been realized. Cross-cultural studies have found that less individualistic cultures may incorporate concerns for family and community units in their own life assessments (Diener, Oishi, and Lucas 2003). Some evaluative-style survey questions may have more potential to incorporate nonprudential values than others; for example, questions focusing on living the "best life" possible may lead individuals to think about moral or spiritual values in addition to prudential values.

While personal sacrifice is a theoretical possibility, the addition of nonprudential concerns to an individual's assessment of her life is unlikely to have a substantial effect and hence is arguably of limited concern. In some cases, the incorporation of what may look like nonprudential concerns for justice, and so forth, may actually relate to concerns for own well-being. In other cases, apparent sacrifices for others may enhance well-being because of the impact of behaving ethically and the experience of giving and caring. Whether an individual judges that she is leading a good life and how she would judge her life in terms of how well it is going for her is likely to, in most cases, be extremely similar. Although measures of well-being from an evaluative perspective have the potential to be contaminated by nonprudential values, it is unlikely that they will be contaminated to such an extent that subjective eval-

uation becomes an inappropriate concept of well-being for public policy (Ng 1997).

However, as Nozick (1974) has famously argued, there may be more to life than experience. While subjective evaluations incorporate more than hedonic affect, they cannot incorporate truth or the degree of authenticity in our experience. If an individual claims to be extremely happy and satisfied with life but is not educated, has no material resources, has low income, and is in very poor health, then we may find it difficult to accept her own assessment of her life as a good proxy for her well-being. This may be because we believe that some objective circumstances really do contribute to well-being and that there must be something wrong with her subjective assessment. Or it may stem from a belief that some objective circumstances are inherently valuable. This would not invalidate subjective evaluation but simply suggests adherence to a substantive good account of well-being.

### 3.2. Is The Measure Valid?

**3.2.1. Preference Satisfaction.** One obstacle to intra- and interpersonal comparisons of preference satisfaction arises where desires are influenced by existing and past circumstances. Since an individual's preferences may be different in different periods of time depending upon recent experience, preference orderings of different situations may change over time. If desires are bought in line with expectations, then in situations of long-standing deprivation, people may be "too subdued or broken to have the courage to desire much" (Sen 1992). As neatly put by Griffin (1986), "Our desires are shaped by our expectations, which are shaped by our circumstances. Any injustice in the last infects the first." As our circumstances change, we are left with no clear vantage point from which to make intertemporal comparisons of our well-being.

Income as a measure of preference satisfaction assumes that only those desires that are met contribute to well-being and that unmet desires will be constant or at least independent of income. However, evidence suggests this is not the case. For example, van Praag (1993) finds that wealthier respondents require greater levels of money to call an income sufficient, and both Easterlin (2000) and Stutzer (2004) find that increases in income lead to greater aspirations. Studies incorporating lagged income have tended to find a negative but weak effect. Di Tella, Haisken-De New, and MacCulloch (2005) analyze German data and find negative coefficients on income in the previous 4 years. Graham and Pettinato (2001) identify a group of "frustrated achievers" who,

despite a rapid growth in income, are unhappy because of rising aspirations.

Of course, the key issue for making interpersonal comparisons based on income is being able to accurately adjust income by the marginal utility of income. Unfortunately, the evidence on the elasticity of marginal utility of income is limited and implies a wide range of values. Cowell and Gardiner (1999) review the evidence and find that using risk aversion to measure inequality aversion gives a range of .5–4. Pearce (2003) suggests a range between .5 and 1.2 for the implied value of the elasticity of marginal utility of income from savings behavior. Evans (2005) finds a value of 1.4 from revealed social values from personal tax rates in 20 Organisation for Economic Co-operation and Development (OECD) countries. In the absence of definitive evidence, any rate chosen for use in cost-benefit analysis, including a marginal utility of consumption of 1, will be subject to potential challenge (Evans et al. 2005).

Preference satisfaction as proxied by income converges with some other aspects of well-being, such as health, which lends support to its validity as a measure of well-being. Analysis of OECD countries finds that gross domestic product correlates positively with average years of schooling, life expectancy at birth, healthy life expectancy at birth, mortality risk, and volunteering and negatively with income inequality, relative poverty, child poverty, and child mortality (Boarini, Johansson, and Mira d'Ercole 2006). In terms of predictive validity, income predicts health, life expectancy, and educational attainment—but less so life satisfaction over time.

**3.2.2. Subjective Evaluation.** Similar conceptual and measurement problems of intra- and interpersonal comparisons apply to subjective evaluation in that an individual's notion of what makes life go well is likely to be dynamic. What constitutes well-being for an individual will change over time as new opportunities become available (Coyne and Boettke 2006), although there is some evidence to suggest that an individual's satisfaction with life is a relatively stable construct (Eid and Diener 2004). Problems for intertemporal comparisons of well-being arise if individuals (*a*) evaluate their lives as good but would give a different evaluation were they to gain different knowledge or experience and/or (*b*) adapt to their circumstances to the extent that they evaluate their lives as good but would give a different evaluation were they to gain different knowledge or experience. In other words, subjective eval-

uations may also be related to expectations, and expectations may be related to past circumstances.

In relation to interpersonal comparisons, we may mistrust an individual's assessment of her life in situations where we consider her judgment to be impaired. This may arise if she is incapable of making a reasonable judgment about her life because of mental impairment. We may also consider an individual's judgment to be impaired if it is based on beliefs about herself or the world that are not well informed or are myopic. The evaluative account could be based on "autonomous" and "informed" assessments of her life (Sumner 1996), but neither can be clearly identified. Issues of establishing autonomy are discussed by Haybron (2007), who argues that life satisfaction is not merely a judgment but involves affirming or endorsing one's life, but again, the precise implications for the use of subjective evaluations in policy are far from clear.

A further concern exists relating to whether people alter their true responses in order to give a socially appropriate response. For example, some groups may feel uneasy admitting to feelings of sadness and may distort self-reports to present a favorable outward view. For example, Carstensen and Cone (1983) found a high correlation among the elderly between two frequently used measures of psychological well-being and the Edwards Scale of Social Desirability. While these tendencies may be consistent across one individual in different periods of time, they are problematic if people deliberately alter life satisfaction responses to conform to socially acceptable responses following changes in circumstances. For example, the unemployed or recently widowed may report lower levels of life satisfaction to meet social expectations. However, instead of reflecting response artifact, high correlations between social desirability and well-being measures may reflect content overlap between the scales (Diener 1994).

Some evidence to support interpersonal comparisons can be taken from similarities between personal ratings and informant ratings. For example, Lepper (1998) reports self-other (spouse or close friend or relative) correlations between subjective evaluations of around .5. Additional support for interpersonal comparisons can be gained from the fact that the determinants of life satisfaction identified in cross section (from variation between people) are similar to those identified using within-person analysis in panel data. There is also increasing evidence that brain activity and physiological markers (such as cortisol levels) are strongly associated with subjective evaluations in ways that enable

groups with high or low levels of well-being to be identified from these markers.

In terms of convergent validity, life satisfaction ratings converge with other measures, such as others' reports of their life satisfaction, frequency of smiling, and mood ratings (Pavot and Diener 1993; Seidlitz and Diener 1993, Sandvick, Diener, and Seidlitz 1993; Diener and Suh 1997). Interrater reliability of life satisfaction responses has been found to be high, which suggests that individuals are able to recognize and predict the life satisfaction level of others. Associations have been found between positive and negative emotions and startle eye-blink response and facial expressions (Ito and Cacioppo 1999). Blanchflower and Oswald (2007) relate differences in life satisfaction across countries to differences in self-reported high blood pressure.

In relation to predictive validity, life satisfaction measures have also been shown to predict behavior, such as reduced suicide attempts (Koivumaa-Honkanen et al. 2001). Smoking and sleep disturbance were also shown to have a higher prevalence in groups who gave a low evaluation of their life satisfaction and general levels of happiness (Lepper 1998). There is reasonable evidence that happiness is also correlated with morbidity and mortality, at least for some groups (Pressman and Cohen 2005). The health benefits of positive affect have been found in conditions such as strokes (Ostir et al. 2001), the likelihood of catching a cold when exposed to the cold virus and speed of recovery (Cohen et al. 2003), intentional and unintentional fatal injury (Koivumaa-Honkaneen et al. 2002), and future blood pressure (Steptoe and Wardle 2005). There is some evidence that overall happiness and other satisfaction measures are linked to length of life (Deeg and Zooneveld 1989; Danner, Snowdon, and Friesen 2001). Life satisfaction also predicts marital breakup (Gardner and Oswald 2006).

### 3.3. Is The Measure Empirically Useful?

**3.3.1. Preference Satisfaction.** Cardinality first requires there to be a single measure of the proxy for preference satisfaction. However, income may vary depending upon whether individual or household income is used, the method by which income is allocated to members of the household, the method by which nominal incomes are translated into real incomes, whether annual or current (for example, the last month) income is used, the extent to which local and national taxation and subsidies are incorporated, and the extent to which income net of saving and dissaving is incorporated (and the method used for assessing changes in

wealth and assets, such as changes in the value of housing stock). There is no single income measure and good reasons (for example, from data in the BHPS) to suppose these different measures may show considerable variability. In addition, there are concerns about the reliability of reported income as a measure of actual income (Moore, Stinson, and Welniak 2000), particularly where people such as the self-employed perceive an incentive to misrepresent their income.

Further problems arise if we wish to adjust income to include non-market preferences. Methodologies that aim to place a value on the change in well-being following a real or hypothesized change in a non-market good are well established (Brent 2006). However, in terms of using these methodologies to give an indication of well-being at the individual level, there is no clear consensus on what to include or how to include it. Despite the potential to adjust individual income to account for the satisfaction of nonmarket preferences, in reality an income measure of well-being is unlikely to incorporate the fulfilment of nonmarket desires. To the extent that the satisfaction of market desires is not perfectly correlated with satisfaction of nonmarket desires, income as a cardinal measure of desire satisfaction will be undermined. Moreover, if nonmarket goods are positively related to income, the relationship between income and preference satisfaction may not even be clearly ordinal. In the BHPS, for example, higher household incomes are significantly negatively correlated with frequency of talking to neighbors (Peasgood 2007).

In addition, and as noted above, it is widely accepted that there are diminishing marginal returns to income, but we could adjust income for this, such that a 1-unit increase on the adjusted income scale represents the same intensity-weighted desire satisfaction for all levels of income, then the adjusted measure of income may be cardinal. However, as noted above, there is considerable disagreement on the elasticity of marginal utility of income. The UK Treasury recommendation of a constant elasticity of 1 implies that the log of income would be approximately cardinal, which suggests that a similar percentage increase in income across the income range leads to a similar enhancement of well-being as desire satisfaction.

At the individual level, and because of a lack of information, an individual's actual (revealed) preferences may contain some mistakes and be contrary to his real interests. Actual preferences may differ from an individual's informed preferences or "the hypothetical preferences he would have if he had all the relevant information and had made full use

of this information” (Harsanyi 1996, p. 133) for two main reasons. First, choices may be limited by knowledge, experience, and perceptions, all of which are costly to change. Harsanyi (1996) gives the example of a coffee drinker who has knowledge of the taste of only a selection of possible coffees available.

Second, there is good evidence that people mispredict the effects of their choices on their well-being. We fail to anticipate changes in our preferences caused by ownership, or the “endowment effect” (Kahneman, Knetsch, and Thaler 1991). We make erroneous assumptions about our willpower. The large number of credit card users who incur high interest rates and finance charges has been viewed as implying that many credit card users expect to maintain a zero balance but fail to do so (Ausubel 1991). We overestimate our reactions to a range of events (Wilson and Gilbert 2003) and fail to predict adaptation (Dolan and Kahneman 2008). Moreover, our memories of past events are biased so that we focus on the most intense experiences and ignore duration, and this leads us to make further inaccurate future forecasts (Kahneman, Wakker, and Sarin 1997). Our choices may also diverge from those that maximize well-being because of a desire to rationalize our decisions and have clear reasons for making decisions (referred to as “lay rationalism” by Hsee et al. 2003).

In its favor, income is potentially the most sensitive measure since it is possible to show very small changes, although many studies gather income data in broad ranges. In addition, income data are often routinely gathered and monitored, so it certainly appears to be practical to collect.

**3.3.2. Subjective Evaluation.** When respondents are faced with single-item evaluative measures, they may use what would seem a reasonable assumption that the scale is linear, with equal distance between each level. Strictly speaking, we know only that the scale is at least ordinal, and it is possible that reported life satisfaction is a nonlinear function of true life satisfaction, but a number of authors have shown that assuming cardinality or ordinality of the responses to life satisfaction questions is relatively unimportant for the results for the determinants of well-being (Ferrer-i-Carbonell and Fritjers 2004; Frey and Stutzer 2000; Layard, Mayraz, and Nickell 2007).

It is problematic if life satisfaction responses are unduly influenced by what the respondent’s attention is drawn to at the time of the assessment. Life satisfaction questions that ask “taking all things together” require a difficult mental task, and respondents are unlikely to retrieve

all the information relevant to the true assessment of their lives (Schwarz and Strack 1999). Just as misremembering generates problems for the validity of WTP responses, memory biases may also impact life satisfaction responses. People are seen to construct answers to self-reported measures on the basis of selective use of information stored in memory, which opens them up to the influences of situational factors that affect memory recall processes (Diener 1994).

In relation to framing effects, the impact of question order is of particular concern since it suggests that evaluative questions may be subject to systematic biases. Studies that manipulate item order have generally found small (yet significant) effects of item order (Schimmack and Oishi 2005). Responses can also be influenced by the choice of reference group, which itself can be manipulated. The presence of a handicapped person in the room (Strack, Martin, and Schwarz 1988) enhances judgment, which suggests that comparison standards can easily be changed by making one comparison more accessible.

The degree of sensitivity of life satisfaction questions depends on the scale used. Cummins and Gullone (2000) note that a Likert scale of five to seven response options does not exploit the discriminative capacity of most people, and they argue that an 11-point (0–10) scale is preferable for attaining maximum sensitivity with no loss of reliability. At present, analysis of large data sets has explained only a small proportion of the variation in life satisfaction in terms of an individual's circumstances, indicating either fairly rapid adaptation to new circumstances or that circumstances play only a small part in determining life satisfaction—or that the measures are not sufficiently sensitive to pick up important changes. For example, Argyle (1999) estimates that only 15 percent of the variance in life satisfaction is accounted for by circumstances. Studies of twins led to the conclusion that 55 percent of the variance in negative emotionality and 40 percent of the variance in positive emotionality was accounted for by genetics and that in the long run up to 80 percent of happiness is heritable (Lykken and Tellegen 1996).

However, despite this stability, life satisfaction measures are sufficiently sensitive to show robust change following changes in income, marriage, health, employment status, and frequency of contact with friends and family (Dolan, Peasgood, and White 2006). The single life satisfaction questions have an obvious advantage in terms of time and survey space and have been included in many large surveys and found to have high response rates. However, the limited sensitivity of global life satisfaction responses may require very large samples.

#### 4. DISCUSSION

Different accounts of well-being and different measures in those accounts may lead to different conclusions about who is doing well and who is doing badly and may result in different policy decisions. It is important that any measure for policy purposes satisfy some basic conditions; in this paper, we have suggested three possible criteria. These are that the measure use an appropriate conception of well-being for public policy, be a valid representation of what it purports to measure, and be empirically useful. It is unlikely that any well-being measure will fully meet each criterion, and there may be trade-offs between criteria. Further consideration should be given to these issues in future conceptual and empirical research.

We have considered preference satisfaction (proxied by income) and subjective evaluation (proxied by life satisfaction ratings) against these conditions. Preference satisfaction has a firmer theoretical basis if choices reflect desires and if those desires are informed and considered. This has led many philosophers and some economists to move away from actual preferences and toward idealized preferences. However, it is not at all clear precisely how much information is required for idealized preferences, and the concept itself raises considerable problems for measurement. Income as a proxy for well-being is certainly a long way away from idealized preferences. It may also be some way from representing the full set of preferences, including nonmarket preferences that an individual may hold. Ironically, global assessments of life satisfaction, despite reflecting a subjective-evaluation account of well-being, may actually more closely reflect the satisfaction of idealized preferences than income does.

Without agreement on what constitutes how well an individual's life is going—even from her own perspective—considerations of validity will always be problematic. Empirical evidence is useful, but it cannot really answer the question of validity. Both income and life satisfaction ratings suffer from problems of intra- and interpersonal comparability. There is good evidence that aspirations are not independent of income, and so income can be interpreted only as a measure of the actual number of preferences satisfied rather than the proportion of preferences satisfied. Currently, we know surprisingly little about how people's interpretations of life satisfaction scales change when important things in their life change, for example, having children. Such changed circumstances may alter perceptions of end points: life may be better but reported as the

same because our understanding of potential quality of life has been increased, and so on. This is an area where more research is needed.

Although many uncertainties remain, faced with a choice between knowing an individual's income and her self-reported score on a life satisfaction question, the former may well tell us more about her well-being for policy purposes. In terms of empirical usefulness, income and life satisfaction are ordinal rather than cardinal, but ordinal analysis would place a considerable restriction on how well-being measures could be used. Despite appearances, income is unlikely to offer a cardinal measure of well-being. The concept of diminishing marginal utility of income has been around for long time, yet we are no nearer to establishing the extent to which marginal utility diminishes at higher levels of income. It may be more reasonable to treat subjective measures as cardinal (Ferrer-i-Carbonell and Fritjers 2004).

Errors in the reporting and measurement of income can be investigated, since it is an objective and verifiable entity. Of course, the extent to which income is used to meet preferences is more problematic. Some studies have shown that our choices may be subject to faulty reasoning, limited information, and an inability to maximize future outcomes. The extent of and bias in the measurement error this generates is unknown but, given the expanding body of evidence pointing to limitations in choices, is likely to be considerable. In terms of subjective evaluations, there are concerns about the risk of context dependence, and this highlights the need for caution in how we administer surveys.

On the face of it, income is more sensitive than subjective evaluations. However, when we consider sensitivity in terms of important changes in well-being, income loses its comparative advantage. There are still questions about the sensitivity of global life satisfaction ratings because there have been very few studies that evaluate a policy intervention using such ratings. This should be a priority for future research. Income and life satisfaction are both practical to collect, so there is little to choose between them in this regard. However, life satisfaction surveys tend to suffer less from response refusal and missing values.

Overall though, it is clear that both measures of well-being struggle to meet all of the criteria, which may suggest that the measures are not useful—or that the criteria are too strict. However, any measure of well-being that is to be actively used in public policy will probably be treated as if those criteria hold, so we should be clear about exactly what the criteria would be. It is worth emphasizing, of course, that public policy is based on information for groups, and the criteria may be less prob-

lematic when applied to groups rather than to individuals. We may lack confidence in preference satisfaction or subjective evaluations providing an indication of well-being for any one individual but still have confidence in the measures for providing information at a group level—so long as measurement error is not related to group-level characteristics.

There are a number of ways in which a more complete set of preferences could be developed for use in policy. It is possible to adjust income by the inclusion of nonmarket production, valuation for safety, environment, public services, and so on. A more radical approach would be to implement policies that bring actual and idealized preferences closer together. For example, more information could be provided about the consequences of important decisions—including not just details about products (as is good practice in WTP studies) but how people feel after purchasing them. It would be interesting to consider whether we would wish to limit the advertising of some products purely on the basis that they do not really contribute to future subjective evaluations. Such changes would not only improve the use of income as a measure of well-being but also increase the extent to which the satisfaction of preferences enhances experienced well-being.

Equally, if subjective evaluations are well informed and well considered, there is less reason to suspect that life satisfaction assessments are not authentic or are myopic. This suggests that judgments are more valid when individuals have good access to information about factors that affect how well their life is going overall, such as knowledge about health, risk of crime, and the risks of poverty in old age. A more developed theoretical model for subjective evaluations that clarifies the links between current well-being, cumulative well-being, and lifetime well-being would also help to reduce the potential ambiguity over the timescale involved when respondents reply to life satisfaction questions and should lead to more focused survey questions.

Measures of subjective evaluation are still being developed, and ongoing improvements in their validity should follow. For example, greater understanding of what peoples' attention is drawn to at the time of questioning will enable researchers to make an explicit and transparent decision about what to draw peoples' attention to during surveys and to gain an understanding of the potential measurement error inherent in subjective measures. In addition, more information could be given about the anchors when asking survey questions. This may go some way to overcoming response shift, although restrictions in opportunities of

which an individual is not aware (for example, not ever experiencing being in love but not realizing what she is missing) will remain.

It is important to consider the limitations of using any measure of well-being for public policy. Although income and life satisfaction do not meet the criteria fully, subjective evaluations fare at least as well as preference satisfaction and overall substantially better than income alone as an indirect measure of well-being. Therefore, we suggest that policy making could be more efficient in attempts to enhance well-being if it takes due account of the effect that policies have on people's evaluations of how well their lives are going.

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